

CLAIMS

What is claimed is:

- 5           1.    A method of detecting photons, comprising the  
acts of:
- providing a superconductor strip;  
              electrically biasing said superconductor  
              strip; and  
10           directing light onto said biased  
superconductor strip;  
              wherein said biasing is at a level near said  
superconductor strip's critical current thereby to  
detect a single photon incident on said  
15           superconductor strip.
2.    The method of claim 1 wherein said single  
photon is detected by measuring an output pulse from  
said superconductor strip.
- 20           3.    The method of claim 1 wherein said  
superconductor strip is of niobium nitride.
4.    The method of claim 1 wherein said single  
25           photon has a wavelength between the visible and the far  
infrared spectral regions.
5.    The method of claim 1 wherein said  
superconductor strip defines a meander.
- 30           6.    The method of claim 2 wherein said  
superconductor strip has a width equal to or less than  
about 200nm.
- 35           7.    A photon detector comprising a  
superconducting film coupled to a bias source, wherein

said superconducting film is biased near its critical current, and wherein said superconducting film has a dimension which allows detection of a single incident photon.

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8. The photon detector of claim 7 wherein said superconducting film is of niobium nitride.

9. The photon detector of claim 7 wherein a  
10 width of said superconducting film is equal to or less than about 200nm.

10. The photon detector of claim 7 wherein said superconducting film forms a detectable resistive  
15 region upon absorption of said single incident photon.

11. The photon detector of claim 7 further comprising:

a plurality of contact pads coupled to ends  
20 of said superconducting film; and  
wherein said bias source is coupled to said superconducting film at said plurality of contact pads.

25 12. The photon detector of claim 7 wherein said superconducting film defines a meander.

13. The photon detector of claim 11 wherein said contact pads include gold.

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14. The photon detector of claim 7 wherein light is coupled to said superconducting film using an optical fiber.

15. The photon detector of claim 7 wherein light is coupled to said superconducting film through a hemispherical lens.